

REMARKS

Claims 1-10 remain pending in the application.

Reconsideration of the rejections and allowance of the pending application in view of the foregoing amendment and following remarks are respectfully requested.

In the Official Action of May 19, 2003 claims 1-3, 5-8, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Macaulay et al., U.S. Patent No. 3,708,349 in view of Watts, U.S. Patent No. 3,614,383, and claims 4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Macaulay in view of Watts and further in view of Lehmacher et al., U.S. Patent No. 3,384,528. These rejections are respectfully traversed.

Independent claims 1, 5 and 7 have been amended to more clearly define a structural feature of the invention and to more clearly distinguish over the applied prior art reference by additionally reciting the separator being made of an ordinary fiber cloth comprising a resin component which is sublimed by heating. No new matter is introduced by the present amendment. In this regard, please refer to, inter alia, lines 16-18, page 2 and lines 1-4, page 8 of the specification.

It is a disclosed object of the present invention to provide a method and an apparatus for attaching a separator to an electrode plate, which are free from a minute short circuiting caused by a falling-off of active substances from an electrode plate during the time when a

separator is shaped like a pouch by bonding. The method and the apparatus are also configured to cut a bonded portion stably for a long period of time without tool replacement.

To achieve the above-noted object, a method for attaching a separator to an electrode plate includes, inter alia, arranging a sheet-shaped separator so as to cover both surfaces of an electrode plate, thermally welding the separator by applying a first heating plate along a to-be-bonded edge of the separator adjacent to the electrode plate, the first heating plate having a width which is so set as to correspond to a width of a bonded portion of the separator, and cutting off the separator by pressing a second heating plate against substantially a central part of the bonded portion. Further, the separator is made of an ordinary fiber cloth comprising a resin component which is sublimed by heating.

Applicants respectfully submit that the cited references relied upon in the rejections under 35 U.S.C. 103(a) do not disclose such a combination of features.

The primary reference Macaulay refers to and is concerned specifically with a method of constructing multicell batteries, including placing intermittent deposits of electrodes along several separated zones. For the method of Macaulay, a continuous strip of separator material 40 having patches of adhesive impregnated therein is brought into contact with web 7 after the electrodes 20 and 30. Accordingly, the separator of Macaulay utilizes adhesive areas 100 and electrolyte containing areas 42 for bonding.

On the contrary, the present invention utilizes an ordinary fiber cloth free from adhesive and electrolyte. The separator of the present invention is, as recited in the amended claims, made of an ordinary fiber cloth comprising a resin component which is sublimed by heating.

Thus, the Macaulay reference does not teach at least the above-noted feature of the present invention.

The secondary Watts reference is directed to cutting and/or sealing thermoplastic film material. The Watts reference includes an impulse-heated cutting device and a pressure pad on the opposite sides of the film. There is no disclosure of the teachings of the separator as recited in the present invention.

Therefore, Watts does not overcome the deficiencies of Macaulay.

Thus, even assuming, arguendo, that the teachings of Macaulay and Watts can be properly combined, the asserted combination of Macaulay and Watt would not result in the invention as recited in the amended independent claims.

Additionally, in the method for attaching a separator to an electrode plate of the present invention, the separator is supported, via a cushioning member, at one surface opposite to its first heating plate side surface, which is the subject matter recited in claims 3, 8 and 10.

In comparison, as the Examiner has indicated, neither the Macaulay reference nor the Watts reference or the Lehmacher reference teaches the above noted feature (cushioning member) of the present invention. In the Official Action, the Examiner asserts that cushioning members opposite to a cutter are conventional to provide a resilient surface for receiving the cutter to ensure a complete cut, and thus it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have provided in Macaulay et al., a cushioning member opposite the bonding heating plate. However the Examiner does not provide any references for this assertion. Thus, should the Examiner maintain this rejection, Applicants respectfully request that the Examiner provide a reference to show the conventionality of the claimed cushioning member in a combination as claimed.

Further, even though the secondary Watts reference appears to disclose the feature of the bonding and cutting mechanism (Fig. 2 in Watts), there is no motivation to combine the two references, because Watts is directed to an apparatus of cutting and/or sealing plastic film to make bags (col 5, lines 42-46), which is nothing to do with forming a battery.

Claims 5, 6 and 8 are also rejected under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. In particular, the Examiner has indicated that it is unclear if “a cutting protrusion” in claim 6 is the same protrusion in claim 5. This rejection is submitted to be moot for the reasons that follow.

Claims 5 and 7 have been amended to eliminate the inconsistency noted by the Examiner, and thus are believed to be definite and to particularly point out and distinctly claim the subject matter of the invention, and to place the claims in better form for allowance. Accordingly, claims 5, 6 and 8 are believed to fully comply with the provisions of 35 U.S.C. 112, second paragraph.

Independent claims 1, 5 and 7 are now in condition for allowance in view of the amendments and the above-noted remarks. Dependent claims 2-4, 6, 8, 9 and 10 are also submitted to be in condition for allowance in view of their dependence from the allowable base claims and also at least based upon their recitations of additional features of the present invention. It is respectfully requested, therefore, that the rejections under 35 U.S.C.103(a) and on the second paragraph of 35 U.S.C. 112 be withdrawn.

Based on the above, it is respectfully submitted that this application is now in condition for allowance, and a Notice of Allowance is respectfully requested.

Should the Examiner have any questions or comments regarding this response, or the present application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

August 18, 2003  
GREENBLUM & BERNSTEIN, P.L.C.  
1950 Roland Clarke Place  
Reston, VA 20191  
(703) 716-1191

Respectfully submitted,  
Shinsuke FUKUDA et al.

*Willie S. Lydd Reg. No.  
Bruce H. Bernstein 41,568  
Reg. No. 29,027*